# Dynamics of Agricultural Biotechnology

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A S Chandel and R M Kamal

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136 TABASSUM, R; RAJOKA, MI; MALIK, KA. 1992. **Use of chemostat for enhanced production of beta-glucosidase by newly isolated anaerobic cellulolytic *Clostridium* strain RT9**. *Applied Biochemistry and Biotechnology*, 34/35, 317-329.

137 TULI, R; SALUJA, J; NOTANI, NK. 1989. **Cloning and expression in *Escherichia coli* of entomotoxic protein gene from *Bacillus thuringiensis subsp. kurstaki***. *Journal of Genetics*, 68: 3, 147-160; 39 ref.

In a laboratory experiment, a plasmid-borne larvicidal crystal protein gene from *Bacillus thuringiensis subsp. kurstaki* was cloned in *Escherichia coli* using a specific 20-mer oligonucleotide probe. The gene expressed in *E. coli* at a high level. Transgenic *E. coli* cells produced large irregular bodies which were bright under phase contrast microscopy. These were released by sonic disruption of the cells and pelleted by centrifugation. In toxicity trials against the noctuid *Spodoptera litura*, 3rd-instar larvae were exposed to 35 mm castor (*Ricinus communis*) leaf discs treated with transgenic *E. coli*. An immediate effect was the cessation of feeding. A similar response, but to a lesser extent, was observed in larvae feeding on leaf discs treated with a spore-crystal supernatant preparation of *B. T. subsp. kurstaki*. Larvae showed severe growth retardation and no mortality. Larval weight decreased by 80% after feeding for 3 days on leaf discs treated with transgenic *E. coli*. This was greater than the 39% reduction caused by comparable amounts of protein in the spore-crystal preparation. Larval growth was retarded marginally (11%) by the *E. coli* control. The pupation of larvae in controls was complete by the 23rd day; however, the majority of larvae fed on toxin preparations remained in the larval stage. The delay in pupation was in proportion to the extent of the toxicity. Treated larvae required 9 extra days before pupation was complete. Mortality was observed only when the toxin was fed to newly exposed larvae.

## FIELD CROPS

138 BAJAJ, YPS. 1983. **Haploid protoplasts**. *International Review of Cytology*, Suppl. 16, 113-141; 73 ref.

The isolation, culture and fusion of protoplasts from pollen tetrads and maturing pollen, the isolation of haploid protoplasts from mesophyll and callus cells, and the subsequent regeneration of these protoplasts into entire plants is described and a summary of this work is given in a table, comprising many plant species and including *Brassica napus*, *Nicotiana spp.*, potato, rice, wheat and oats. The implications and prospects of haploid protoplasts in the induction of genetic variability, mutations and somatic cell genetics are considered.

139 JALALI, SK; SINGH, SP; BALLAL, CR. 1987. **Role of the host plants of *Spodoptera litura (Fabricius)* on the degree of parasitism by *Cotesia marginiventris (Cresson)* (*Hymenoptera*: *Braconidae*)**. *Indian Journal of Agricultural Sciences*, 57: 9, 676-678; 3 ref.

Laboratory studies were conducted in India to determine the effect of host plants on the degree of parasitism of the noctuid *Spodoptera litura* by *Cotesia marginiventris* [*Apanteles marginiventris*]. Results of single-plant choice tests indicated that *A. marginiventris* had a marked preference for *S. litura* larvae on castor (*Ricinus communis*) (49.3% parasitism), followed by cowpea (*Vigna unguiculata*) (24.0%), tobacco (20.0%), okra (16.0%), cabbage (13.3%), knolkhol [kohlrabi] (10.7%), cauliflower (10.7%) and beetroot (9.3%). Although 20% of the larvae were parasitized on tobacco leaves, female parasitoids became very inactive after contact with the leaves and died within an hour. The sex ratio of *A. marginiventris* differed slightly on the various host plants. Results of multiple-plant choice tests indicated that given a choice of all the host plants at once, the parasitoid preferred the host on kohlrabi (56% parasitism), followed by cabbage (29.3%), castor (28.0%), cowpea (28.0%), beetroot (18.7%), cauliflower (16.0%), okra (10.7%) and tobacco (1.3%). In this test, the parasitoid showed least preference for larvae on tobacco. These results indicate that *A. marginiventris* would not be suitable for release against *S. litura* on tobacco.

140 MIAH, MAA. 1992. **Tissue culture; advances in crop science**. *Proc. on the First biennial Conference of the Crop Science Society of Bangladesh*. (Dhaka: May 18 20). Crop Science Society of Bangladesh. p. 294 299.

## CEREAL GRAINS

141 AZIZ, JA; AZIZ, SA. 1985. **Food preference and the plant selection pattern in *Oxya velox Fab.* (*Orthoptera: Acrididae*)**. *Journal of Entomological Research*, 9: 2, 179-182; 7 ref.

The food preference of *Oxya velox* was evaluated in the laboratory at 30°C and 60% RH using 10 different plant leaves. The early instar hoppers preferred the grass to the cereal crops, while the reverse was found for late instar hoppers and adults. The descending order of preference for late instar hoppers and adults was a mixed diet of rice, *Cynodon dactylon* and *Echinochloa*